

Notice of Allowability

Application No.

10/673,271

Examiner

(Nancy) Thanh-Nhan P. Nguyen

Applicant(s)

TORIYAMA ET AL.

Art Unit

2871

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 4/4/2006.
2. ☒ The allowed claim(s) is/are 1,3,5,7,9 and 10.
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some* c) ☐ None of the:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

EXAMINER'S AMENDMENT

This communication is responsive to Amendment dated 4/4/2006.

Claims 9 and 10 are newly added. Accordingly, claims 1, 3, 5, 7, 9 and 10 are pending for the examination.

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

Since the title of the invention is not descriptive, a new title is required that is clearly indicative of the invention to which the claims are directed.

The title has been changed to: "Twisted nematic liquid crystal material with certain values for dielectric constant anisotropy, twisted elasticity modulus and refractive index anisotropy."

Allowable Subject Matter

Claims 1, 3, 5, 7, 9 and 10 are allowed.

Reasons for Allowance

Claims 1, 3, 5, 7, 9 and 10 are allowed since there is no prior art of record that teaches or suggests a liquid crystal display element comprising a relationship of various elements as claimed with the specific allowable subject matter cited in the following claims:

Claims 1 and 7:

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- a twisted nematic liquid crystal material used in liquid crystal layer satisfies dielectric constant anisotropy $\Delta\epsilon$ of $0 < \Delta\epsilon < 8$ and twisted elasticity modulus K22 of $K22 > 6.0$ pN when the refractive index anisotropy Δn is $0.16 \leq \Delta n \leq 0.18$.

Claims 3, 5 and 9 are allowed since they depend on allowed claim 1; claim 10 is allowed since it depends on allowed claim 7.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Kitahora et al (US 2002/0039167) discloses a liquid crystal composition contains a mixture of a chiral material and nematic liquid crystal satisfies dielectric constant anisotropy $\Delta\epsilon$ of $5 \leq \Delta\epsilon \leq 50$, the refractive index anisotropy Δn of $0.15 \leq \Delta n \leq 0.23$. However, Kitahora et al lacks disclosure of the twisted elasticity modulus of the liquid crystal composition.

Tanaka et al (US 2003/0151710) discloses an optically self-compensated birefringence (OCB) mode having a twisted elasticity modulus $K22 < 10$ pN. Tanaka et al teaches away from using a twisted nematic mode with slow response and narrow viewing angle.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to (Nancy) Thanh-Nhan P. Nguyen whose telephone number is 571-272-1673. The examiner can normally be reached on Monday to Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Nelms can be reached on 571-272-1787. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

(Nancy) Thanh-Nhan P Nguyen
Examiner
Art Unit 2871

TN


ANDREW SCHECHTER
PRIMARY EXAMINER